

## RADIOTHERAPY

## Stop recurring breast cancer nightmares

Over the years, the investigators conducting trials in patients with early stage breast cancer have been sharing their data, aiming to ensure that incremental changes in survival are not missed. A recent study by this group of researchers (the Early Breast Cancer Trialists' Collaborative Group) has taken advantage of this rich seam of data to show that treating patients with early stage breast cancer with radiotherapy after breast-conserving surgery significantly decreases recurrence and breast cancer mortality.

In their most-recent endeavor, the trialists were led by Sarah Darby from Oxford University. The study was designed as follows: "we sought data on every woman randomized in a trial in which women who had undergone breast conserving surgery were randomly allocated to receive radiotherapy or to receive no radiotherapy ... [This approach] avoids publication bias, as more extreme results are more likely to be published, and published sooner, than less extreme ones," explains Darby. Using these criteria, the trialists obtained data on 10,801 women. By obtaining information on each individual woman, rather than grouping the data by trial, the trialists were able to assess each patient in the same way, to reduce factors that may confound the data.

The first results of this study were not unexpected. Radiotherapy reduces the risk of recurrence in these patients.

However, as Darby explains, "these data show very clearly that the recurrence rate is not just reduced for a couple of years, but for the whole of the first decade." Indeed, radiotherapy after surgery reduced the 10-year risk of recurrence in all patients from 35.0% to 19.3%, a reduction of almost a half. "Furthermore, it has only relatively recently been realized that radiation has such a big effect on mortality. This positive outcome was at first not recognized because it takes 5 years to show up," points out Darby as she refers to the reduction in death from breast cancer of about one sixth that was observed in the study. In all the patients included in the study, the 15-year risk of death from breast cancer was significantly reduced from 25.2% to 21.4% by radiotherapy. However, assessing all the patients as one cohort is only one part of the story. The trialists also wanted to look at the absolute risk reduction in different patient groups to see if they could form any recommendations for radiotherapy at the time of surgery.

For this assessment, the women in the study were split into four groups. The first was women with node-positive disease (1,050 women). The patients with node-negative disease were then stratified according to age, grade, estrogen-receptor status, tamoxifen use and extent of surgery to obtain three groups: high risk ( $\geq 20\%$  risk of recurrence; 1,924 women), intermediate risk (10–19%; 3,763 women)



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and low risk ( $< 10\%$ ; 1,600 women). In all groups the risk of recurrence and death was similarly reduced by radiotherapy, but the absolute reduction was dependent on the original level of risk (that is, a reduction of 50% of a risk that starts at 40% is a 20% absolute reduction, the same reduction for a 10% starting risk is a 5% absolute reduction).

These data seem to indicate that all patients undergoing breast-conserving surgery would benefit from radiotherapy to reduce recurrence and subsequent potential death from breast cancer. The level of benefit to individual patients might be relative to their initial risk, but it is significant and can be used to advise patients going forward. In addition to the potential uses for these results, "further analyses ... will look at the effect of chemotherapy," explains Darby.

Rebecca Kirk

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